LIST OF CONTENTS

NUMBER 1 JANUARY

● *EDITORIAL*

A New Look for *Health Physics*
Genevieve S. Roessler 1

● *EDITORS' PAGES*

International System of Units 3

References 7

● *OBITUARY*

Edward L. Alexander (1925–1986) 11

● *GUEST EDITORIAL*

Radiation Protection in a Pluralistic Society
Charles B. Meinhold 13

● *ORIGINAL CONTRIBUTIONS*

The Effect of Rare Earth Filtration on Patient Exposure, Dose Reduction, and Image Quality in Oral Panoramic Radiology
Donald A. Tyndall and David B. Washburn 17

Field Laser Hazard Calculations
Wesley J. Marshall and Philip W. Conner 27

Effects on Energy Absorption of Orientation and Size of Animals Exposed to 2.45-GHz Microwave Radiation
D. I. McRee and H. G. Davis 39

Radionuclide Export by Deer Mice at a Solid Radioactive Waste Disposal Area in Southeastern Idaho
W. J. Arthur, O. D. Markham, C. R. Groves and B. L. Keller 45

Alternatives to the BEIR Relative Risk Model for Explaining Atomic-Bomb Survivor Cancer Mortality
Bernard L. Cohen 55

● *BRIEF COMMUNICATIONS*

Uncertainties Associated with Using Quick-Sort Techniques to Estimate Neutron Doses Following Criticality Accidents
R. E. Swaja and R. Oyan 65

The Relationship Between Water-System Size and ^{222}Rn Concentration in North Carolina Public Water Supplies
Dana P. Loomis 69

Correlation Between ^{226}Ra in Soil, ^{222}Rn in Soil Gas, and ^{222}Rn Inside Adjacent Houses
Richard Nason and Bernard L. Cohen 73

Evaluation of a Terrestrial Food-Chain Model Using Natural Analogs
D. C. Kocher 79

Use of ^{99m}Tc for Calibrating Survey Meters
Mark H. Selikson and Norman McElroy 83

Dosimetry of Aqueous ^{32}P after Soft-Tissue Infiltration Following Attempted Intravenous Administration
Bruce D. Minsky, Robert L. Siddon, Abram Recht and James S. Nagel 87

Towards a General Model of Health Detriment Cost Evaluation
H. Jammet and J. Lombard 91

● *CORRESPONDENCE*

Pseudoscience
John H. Harley 103

Pseudoscience: In Reply
Richard J. Hickey, Richard C. Clelland and Evelyn J. Bowers 103

Comments on "Radon-222 and ^{222}Rn Progeny Concentrations Measured in an Energy-Efficient House Equipped with a Heat Exchanger"
M. A. Gomaa 105

Reply to Comments on ^{222}Rn and ^{222}Rn Progeny Concentration Measurements
Robert F. Holub and Thomas B. Borak 105

Misconceptions of Medical Students about Radiological Physics
Ronald Kaczmarek, Daniel R. Bednarek and Roland Wong 106

● *BOOK REVIEW*

***Fast Reactor Physics* (a special issue of *Progress in Nuclear Energy*—Vol. 16, No. 3), edited by M. M. R. Williams, 1985**
Anthony R. Benedetto 109

● *IRPA ABSTRACTS*

Annual Congress of The South African Association of Physicists in Medicine and Biology 111

● *NEWS AND NOTICES* 115

● *HEALTH PHYSICS SOCIETY PROSPECTUS* 123

● *HEALTH PHYSICS SOCIETY AFFILIATE MEMBERS* 125

● *INSTRUCTIONS TO CONTRIBUTORS* 127

● *SOFTWARE SURVEY SECTION* I

REMedy-A: A PROGRAM TO ASSESS INTERNATIONAL RADIATION DOSE FROM AIR CONCENTRATION DATA

KUXKVPS—MEDICAL DIAGNOSTIC X-RAY SHIELDING ROUTINE

MICROSHIELD

GAMMA DATA REDUCTION (GDR)

● *ADVERTISERS INDEX* Appears in the back of this issue

NUMBER 2 FEBRUARY

● *EDITORIAL*

A Little Learning . . .
Ralph H. Thomas 129

● *OBITUARY*

Peter Courvoisier (1915–1986) 131

● *PAPERS*

Analytical Modeling of Worldwide Medical Radiation Use
Fred A. Mettler Jr., Michael Davis, Charles A. Kelsey, Robert Rosenberg and Arvis Williams 133

An Integrating Thermoluminescent Rn Daughter Personal Dosimeter
S. B. Solomon, J. R. Peggie, G. Grealy and V. A. Leach 143

Age-dependent Lung Doses from Ingested ^{222}Rn in Drinking Water
Douglas J. Crawford-Brown 149

Using Cost/Risk Procedures to Establish Recovery Criteria Following a Nuclear Reactor Accident
Jack J. Tawil and Dennis L. Strenge 157

Cesium-137 Body Burdens in Norwegian Lapps, 1965–1983
E. A. Westerlund, T. Berthelsen and L. Berteig 171

Actinide Distribution in the Human Skeleton
Ronald L. Kathren, James F. McInroy and Margery J. Swint 179

Ingestion Intake of Fallout Pu in Japan
Shun'ichi Hisamatsu, Yukio Takizawa and Touru Abe 193

Trees as Indicators of Subterranean Water Flow from a Retired Radioactive Waste Disposal Site
W. H. Rickard and L. J. Kirby 201

Transfer Coefficient of ^{226}Ra from Food to Young Weaned Meadow Voles, *Microtus pennsylvanicus*, in the Laboratory
B. Burns, F. V. Clulow, N. R. Cloutier, N. K. Davé and T. P. Lim 207

● *NOTES*

Cigarette Smoke and Lung Cancer
T. B. Martonen, W. Hofmann and J. E. Lowe 213

Serendipitous Dosimetry—An Opportunity and an Opportunity Lost
Robert L. Fleischer 219

Radiation Protection Aspects of the Sequoyah Nuclear Plant Thimble Tube Ejection
Wayne E. Farrell 223

The Lung Model and Fluctuations in Air Activity
K. Unnikrishnan and M. A. Prasad 229

Concentration Ratios of Natural U for Cattail Pollen
B. D. Amiro and S. C. Sheppard 233

● *CORRESPONDENCE*

More Comments on Rn Risk Estimates in *NCRP Report No. 77*
Andrew P. Hull 237

● *BOOK REVIEWS*

Recent Publications of the National Council on Radiation Protection and Measurements: *Neutron Contamination of Medical Accelerators* (NCRP Report No. 79); *Induction of Thyroid Cancer by Ionizing Radiation* (NCRP Report No. 80); *SI Units in Radiation Protection and Measurements* (NCRP Report No. 82); *Mammography—A User's Guide* (NCRP Report No. 85); *Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields* (NCRP Report No. 86).
Anthony R. Benedetto 239

***An Introduction to Emission Computed Tomography*, edited by E. D. Williams**
David A. Weber 239

***A Handbook of Radioactivity Measurement Procedures* (2nd edn) (NCRP Report No. 58)**
Geoffrey G. Eichholz 240

***Radiation Protection* (Medical Physics Handbook 16) by Ronald L. Kathren**
B. Ahluwalia 240

***Risk Assessment for Hazardous Installations* by J. C. Consultancy Ltd. (for the Commission of the European Communities)**
Geoffrey G. Eichholz 241

● *NEWS AND NOTICES* 243

● *HEALTH PHYSICS SOCIETY PROSPECTUS* 251

● *HEALTH PHYSICS SOCIETY AFFILIATE MEMBERS* 253

● *INSTRUCTIONS TO CONTRIBUTORS* 255

● *SOFTWARE SURVEY SECTION* I

RADIUM SHIELDING VERSION 4.3

● *ADVERTISERS INDEX* Appears in the back of this issue

NUMBER 3 MARCH

● *AWARD PRESENTATIONS*

1986 Distinguished Scientific Achievement Award—Victor P. Bond
Citation by Charles B. Meinhold 257

1986 Founders Award—Allen Brodsky
Citation by Robert E. Alexander 259

1986 Elda E. Anderson Award—Darrell Reed Fisher
Citation by Ronald L. Kathren 261

1986 Health Physics Society Student Awards 265

● *PAPERS*

Fallout sheltering: is it feasible?
Robert Ehrlich and James Ring 267

Potable water as a source of airborne ^{222}Rn in U.S. dwellings: a review and assessment
W. W. Nazaroff, S. M. Doyle, A. V. Nero and R. G. Sextro 281

Theoretical evaluation of the ^{222}Rn emanation coefficient for coal fly ash
E. A. Maraziotis 297

Radium-226 contents and Rn emanation coefficients of particle-size fractions of alkaline, acid and mixed U mill tailings
Edward R. Landa 303

Partitioning of natural radionuclides in the waste streams of coal-fired utilities
Douglas R. Roeck, Thomas C. Reavey and James M. Hardin 311

Dose assessment from incineration of deregulated solid biomedical radwaste
Victor Evdokimoff 325

Determining picogram quantities of U in human urine by thermal ionization mass spectrometry
W. R. Kelly, J. D. Fassett and S. A. Hotes 331

A method for estimating the systemic burden of Pu from urinalyses
R. W. Leggett and K. F. Eckerman 337

Cosmic-ray ionization in the lower atmosphere
Pao-Shan Weng and Chin-Fang Chen 347

A model for predicting food and water ingestion and inhalation rates of humans
Reto Zach and John W. Barnard 353

● *NOTES*

Ground-water concentrations of ^{226}Ra and ^{222}Rn in North Carolina phosphate lands
James E. Watson, Jr. and Barry F. Mitsch 361

Occupational radiation exposures during maintenance activities at nuclear power plants in Japan
Akira Imahori 367

Reduced radiostrontium absorption in a human subject treated with composite treatment for mixed fission product contamination
Krista Kostial, Biserka Kargačin and Ivan Šimonović 371

Distribution of low-level concentrations of $^{239,240}Pu$ in tissues of a beagle
Narayani P. Singh, Carol J. Zimmerman, Glen N. Taylor and McDonald E. Wrenn 373

Gamma activity in struverite
S. J. Hu, S. Kandaiya and Fawzi Benoan 379

Holder for uncovered high-activity radionuclide sources of α particles and fission fragments
R. J. McDonald and M. L. Padgett 381

Marble attenuation characteristics for diagnostic x rays
Samir Abdul-Majid 385

● *CORRESPONDENCE*

Comments on "An alternative technique for attaching thermoluminescent dosimeters to small mammals"
Richard C. Simmonds 389

Reply to comments on an alternative technique for attaching TLDs to small mammals
Mark A. Rumble 389

Comments on limits of the spectral ranges in the non-ionizing radiation region of the electromagnetic spectrum for classification and exposure limit determination
N. Bhagwandin and H. Breuer 390

Reply to comments on limits of the spectral ranges in the non-ionizing radiation (NIR) region of the electromagnetic spectrum
David H. Sliney 390

● *BOOK REVIEWS*

The Quality Factor in Radiation Protection **(ICRU Report 40) by Joint Task Group of the International Commission on Radiological Protection and the International Commission on Radiation Units and Measurements**
Review by Ralph H. Thomas 391

Techniques of Radiation Dosimetry, **edited by K. Mahesh and D. R. Vij**
Review by Edward L. Chaney 392

The Experimental Basis for Absorbed-dose Calculations in Medical Uses of Radionuclides **(NCRP Report No. 83);** ***General Concepts for the Dosimetry of Internally Deposited Radionuclides*** **(NCRP Report No. 84);** ***Some Issues Important in Developing Basic Radiation Protection Recommendations*** **(Proceedings No. 6);** ***Screening Techniques for Determining Compliance with Environmental Standards*** **(NCRP Commentary No. 3)**
Review by Geoffrey G. Eichholz 393

***Physics in Medicine and Biology Encyclopedia,* edited by T. F. McAinsh**
Review by William R. Hendee 393

***Power to Our Grandchildren* by George William Campbell Tait**
Review by Theodore C. Doege 394

● *ERRATUM*

Correction for "Biometric estimation of chest wall thickness of females,"—*Health Phys.* 49, 419–424 395

● *NEWS AND NOTICES* 397

● *HEALTH PHYSICS SOCIETY PROSPECTUS* 405

● *HEALTH PHYSICS SOCIETY AFFILIATE MEMBERS* 407

● *INSTRUCTIONS TO CONTRIBUTORS* 409

● *SOFTWARE SURVEY SECTION* I

ACUTE INHALATION DOSIMETRY USING ICRP 30
INDOS—INTERNAL DOSIMETRY ASSESSMENT PROGRAMS

● *ADVERTISERS INDEX* Appears in the back of this issue

NUMBER 4 APRIL

● *PAPERS*

Surface Radioactivity Resulting from the Deposition of ^{222}Rn Daughter Products
R. S. Lively and E. P. Ney 411

Quantitative Risk Assessment of Lung Cancer in U.S. Uranium Miners
Richard W. Hornung and Theodore J. Meinhardt 417

A General Solution to the Shielding of Medical x and γ Rays by the *NCRP Report No.* 49 Methods
Douglas J. Simpkin 431

A Survey of Radiation Dose and Image Quality in Mammography: An Ongoing Program in Italy
O. Rimondi, M. Gambaccini, G. C. Candini, P. L. Indovina and A. Rosati 437

Thermoluminescence Dosimetry of γ Rays From the Hiroshima Atomic Bomb at Distances of 1.27 to 1.46 Kilometers From the Hypocenter
Yoneta Ichikawa, Tsuneto Nagatomo, Masaharu Hoshi and Sohei Kondo 443

Air Concentrations of ^{239}Pu and ^{240}Pu and Potential Radiation Doses to Persons Living Near Pu-Contaminated Areas in Palomares, Spain
E. Iranzo, S. Salvador and C. E. Iranzo 453

The Stanford Linear Accelerator Center Pulsed x-Ray Facility
N. E. Ipe, R. C. McCall and E. D. Baker 463

● *NOTES*

Optimizing the Gross α Counting Method for Determining Rn Progeny Levels in the Atmosphere
C. Rangarajan and C. D. Eapen 469

Atmospheric ^{222}Rn in Tourist Caves of Slovenia, Yugoslavia
I. Kobal, B. Smodiš, J. Burger and M. Škofljanec 473

Elimination of ^{131}I in Meadow Voles (*Microtus pennsylvanicus*) Measured by Whole-Body γ Spectrometry
Charles Kingsley Levy, David C. Morimoto and Robert H. Tamarin 481

A Survey-Instrument Design for Accurate β Dosimetry
C. L. Graham 485

Shielding Design for the Ceiling of a 6-MV Accelerator in an Existing Facility
Peter J. Biggs 491

● *CORRESPONDENCE*

Comments on 'The Main Inconsequences in the Present Radiological Protection Concept for the General Population'
Jack A. Simmons 495

Reply to Comments by Simmons Regarding Radiological Protection for the General Population
F. Steinhäusler and I. Uzunov 496

Comment on 'An Epidemiological Analysis of the Relationship Between Exposure to Rn Progeny, Smoking and Bronchogenic Carcinoma'
James E. Watson, Jr. 497

Reply to Comments on Rn Progeny Exposure, Smoking and Bronchogenic Carcinoma
Geno Saccomanno 497

● *BOOK REVIEW*

An Introduction to Radiation Protection **(3rd edn) by Alan Martin and Samuel A. Harbison**
Stanley S. Jaeger 499

● *ERRATUM*

Correction for "RADFOOD—A Dynamic Model for Radioactivity Transfer Through the Human Food Chain," ***Health Phys.*** **50, 721–737.** 501

● *NEWS AND NOTICES* 503

● *HEALTH PHYSICS SOCIETY PROSPECTUS* 511

● *HEALTH PHYSICS SOCIETY AFFILIATE MEMBERS* 513

● *INSTRUCTIONS TO CONTRIBUTORS* 515

● *SOFTWARE SURVEY SECTION* I

TRAINING RECORD SCHEDULING AND MAINTENANCE

● *ADVERTISER INDEX* Appears in the back of this issue

NUMBER 5 MAY

● *EDITORIAL COMMENT*

Radiation Hormesis
Genevieve S. Roessler 517

● *PREFACE*

Conference on Radiation Hormesis: An Overview
Jerry J. Cohen 519

● *GUEST EDITORIAL*

What is Hormesis and Why Haven't We Heard about It Before?
Leonard A. Sagan 521

● *HORMESIS OVERVIEW*

Hormetic Effects in Pharmacology: Pharmacological Inversions as Prototypes for Hormesis
Arthur Furst 527

The Occurrence of Chemically Induced Hormesis
Edward J. Calabrese, Margaret E. McCarthy and Elaina Kenyon 531

Growth Hormesis: A By-product of Control
A. R. D. Stebbing 543

Physiology of the Hormetic Effect
John R. Totter 549

Sigmoid Growth and the Assessment of Hormesis: A Case for Caution
I. Lehr Brisbin Jr., Kenneth W. McLeod and Gary C. White 553

● *CELLULAR AND TISSUE LEVEL EFFECTS*

Adaptation of Cell Renewal Systems under Continuous Irradiation
Jacob I. Fabrikant 561

Influence on Cell Proliferation of Background Radiation or Exposure to Very Low, Chronic γ Radiation
H. Planel, J. P. Soleilhavoup, R. Tixador, G. Richoilley, A. Conter, F. Croute, C. Caratero and Y. Gaubin 571

Radiation Hormesis: Its Expression in the Immune System
Shu Zheng Liu, W. H. Liu and J. B. Sun 579

Delayed Effects of Low-dose Radiation on Cellular Immunity in Atomic Bomb Survivors Residing in the United States
Eda T. Bloom, Mitoshi Akiyama, Yoichiro Kusunoki and Takashi Makinodan 585

● *PLANT AND ANIMAL EFFECTS*

A Review of Certain Low-level Ionizing Radiation Studies in Mice and Guinea Pigs
Charles C Congdon 593

Factors Controlling the Hormesis Response in Irradiated Seed
S. C. Sheppard and P. J. Regitnig 599

Radiation Hormesis in Plants
Morton W. Miller and W. Marcus Miller 607

● *ALPHA-PARTICLE EXPOSURES*

Cancer Incidence and Lifespan vs. α-particle Dose in Beagles
Charles W. Mays, R. D. Lloyd, G. N. Taylor and M. E. Wrenn 617

Plutonium and Lung Cancer
Gary L. Tietjen 625

Tests of the Linear, No-Threshold Dose-Response Relationship for High-LET Radiation
Bernard L. Cohen 629

● *HUMAN EFFECTS*

Does Radiation Exposure Produce a Protective Effect among Radiologists?
G. M. Matanoski, A. Sternberg and E. A. Elliot 637

Dose-response Analyses among Atomic Bomb Survivors Exposed to Low-level Radiation
Hiroo Kato, William J. Schull, Akio Awa, Mitoshi Akiyama and Masanori Otake 645

Environmental Radiation and Cancer in India
K. S. V. Nambi and S. D. Soman 653

● *MECHANISMS*

Microdosimetric Concepts Applied to Hormesis
V. P. Bond, L. E. Feinendegen and C. A. Sondhaus 659

Intracellular Stimulation of Biochemical Control Mechanisms by Low-dose, Low-LET Irradiation
L. E. Feinendegen, H. Mühlensiepen, V. P. Bond and C. A. Sondhaus 663

Critical Values of Linear Energy Transfer, Dose Rates and Doses for Radiation Hormesis
Kazuto Okamoto 671

Epistemological Problems in Assessing Cancer Risks at Low Radiation Doses
Gunnar Walinder 675

● *CORRESPONDENCE*

Health Effects of Ionizing Radiation: Dr. Sagan's Paradigms
John W. Gofman 679

Reply to Dr. Gofman's Comments on the Health Effects of Ionizing Radiation
Leonard A. Sagan 680

- *NEWS AND NOTICES* 681
- *HEALTH PHYSICS SOCIETY PROSPECTUS* 689
- *HEALTH PHYSICS SOCIETY AFFILIATE MEMBERS* 691
- *INSTRUCTIONS TO CONTRIBUTORS* 693
- *SOFTWARE SURVEY SECTION* I

Spectrum Analyzing Utility Routines (SAUR)

- *ADVERTISERS INDEX* Appears in the back of this issue

NUMBER 6 JUNE

- *GUEST EDITORIAL*

Indoor Air Pollution: Gathering Together
Anthony V. Nero Jr. xvii

- *REVIEW ARTICLE*

Extremity Dose: Its Definition, Standards and Regulatory Limits, Radiobiological Significance, Measurement and Practical Considerations
K. S. Thind 695

- *PAPERS*

The Interception and Retention of ^{238}Pu Deposition by Orange Trees
J. E. Pinder III, D. C. Adriano, T. G. Ciravolo, A. C. Doswell and D. M. Yehling 707

PATHWAY: A Dynamic Food-Chain Model to Predict Radionuclide Ingestion After Fallout Deposition
F. Ward Whicker and T. B. Kirchner 717

An Evaluation of the U.S. Army Fallout Prediction Model
A. Pernick and I. Levanon 739

Radiation Carcinogenesis in Humans: Is It Necessary to Revise Exposure Dose Limits Based on Recent Estimates of Lifetime Risks?
Nguyen Phong Chau 753

Evaluation of a Technique for Separating Organic Material from Mineral Bone in Individuals Occupationally Exposed to Pu
John J. Miglio and Linda C. Willis 763

Macro-Distribution of Naturally Occurring α-Emitting Isotopes of U in the Human Skeleton
Narayani P. Singh, David B. Bennett and McDonald E. Wrenn 769

Use of Environmental TLD Data at a Nuclear Power Station to Estimate Detection Limits for Radiation Exposure Due to Station Operation
Edit Lang, James Hardeman and Bernd Kahn 775

Measurement of ^{14}C Emission Rates from a Pressurised Heavy Water Reactor
M. L. Joshi, B. Ramamirtham and S. D. Soman 787

● *NOTES*

Plutonium and Am Contamination of Tourist Property and Estimated Inhalation Intake of Visitors to Kiev After the Chernobyl Accident
Hisao Kawamura 793

Moisture and ^{222}Rn Emanation
Robert L. Fleischer 797

Indoor Ventilation Rates for ^{222}Rn
Terence B. Terilli and Naomi H. Harley 801

Measurements of Terrestrial γ Radiation in Taiwan, Republic of China
Yu-Ming Lin, Pei-Huo Lin, Ching-Jiang Chen and Ching-Chung Huang 805

Personal Dosimetry in a Mixed Field of High-Energy Muons and Neutrons
J. D. Cossairt and A. J. Elwyn 813

Evaluation of External Monitoring Versus Urine Assay for Determining Post-Therapy Body Retention of ^{131}I
James A. Ponto, Laura L. B. Ponto and John A. Bricker 819

● *CORRESPONDENCE*

Lung Cancer Risk from Rn in Chinese Study
Victor E. Archer 823

● *BOOK REVIEWS*

A Guide to Radiation Protection in the Use of X-Ray Optics Equipment **(Occupational Hygiene Monograph 15)**
Reviewed by Anthony R. Benedetto 825

Handbook of Management of Radiation Protection Programs **by Kenneth L. Miller and William A. Weidner**
Reviewed by William R. Hendee 825

Meeting Energy Challenges, **edited by C. B. Smith, T. Davis and P. W. Turnbull**
Reviewed by Geoffrey G. Eichholz 826

Multiple Regression Analysis: Applications in the Health Sciences **(Medical Physics Monograph No. 13), edited by Donald E. Herbert and Raymond H. Myers**
Reviewed by William R. Hendee 826

● *NEWS AND NOTICES* 827

● *HEALTH PHYSICS SOCIETY PROSPECTUS* 835

● *HEALTH PHYSICS SOCIETY AFFILIATES* 837

● *INSTRUCTIONS TO CONTRIBUTORS* 839

● *SOFTWARE SURVEY SECTION* I

INTERNAL DOSE INTEGRATION MODULE

- *LIST OF CONTENTS FOR VOL. 52* VII
- *AUTHOR INDEX FOR VOL. 52* XXI
- *SUBJECT INDEX FOR VOL. 52* XXIII
- *ADVERTISER INDEX* Appears in the back of this issue